




**United States Environmental Protection Agency  
Region II**

**Date:** OCT 29 2010

**Subject:** Removal Site Evaluation (Phase II) for the Cornell-Dubilier Electronics Site, South Plainfield, Middlesex County, New Jersey

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**To:** File

The U.S. Environmental Protection Agency (EPA) Removal Action Branch (RAB) received a request from the New Jersey Remediation Branch on August 20, 2007 to evaluate a portion of the Cornell-Dubilier Electronics Site (Site) for a CERCLA removal action. The request was focused on the Bound Brook and the findings of additional capacitors in the stream corridor.

A Removal Site Evaluation (Phase I), dated August 25, 2008, concluded that a CERCLA removal action was warranted to address potential threats posed by the continued presence and release of capacitors containing elevated levels of PCBs in or near the Bound Brook corridor adjacent to the Site. A removal action was initiated on October 14, 2008 to armor the banks of the Bound Brook with geotextile fabric and rip-rap in the area of the three culverts and along the wetlands that border the historical disposal area on the southeastern edge of the Site. Chain-link fencing and a silt fence were also installed in this area. This action was completed on November 19, 2008. The Removal Site Evaluation (Phase I) also stated that additional removal investigations were ongoing in the Bound Brook corridor, including an ecological evaluation to assess conditions and PCB levels in the stream. The Removal Site Evaluation (Phase II) addresses the results of this additional work.

Cornell-Dubilier Electronics (CDE) operated at the Site from 1936 to 1962, manufacturing electronic components including, in particular, capacitors. PCBs and chlorinated organic solvents were used in the manufacturing process, and it has been alleged that during CDE's period of operation, the company disposed of PCB-contaminated materials and other hazardous substances at the Site. These activities evidently led to widespread chemical contamination at the facility, as well as migration of contaminants to areas nearby. After CDE's departure from the Site in 1962, the facility was operated as a rental property, with over 100 commercial and industrial companies operating at the facility as tenants.

The Site is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey. It occupies approximately 26 acres in an industrial/commercial/residential area and is bordered by commercial businesses and residences to the south, west, and northwest. Wetlands and an unnamed tributary to the Bound Brook border the Site to the southeast and east. Conrail railroad tracks pass alongside the eastern edge of the Site and crisscross the unnamed tributary just north of the Site. Other industries and commercial businesses are present to the northeast and east of the Site on the opposite side of the Conrail tracks. An estimated 540 persons reside

within 0.25 miles of the Site, with the nearest residential homes being located on Spicer Avenue and on the opposite side of Hamilton Boulevard, less than 200 feet from the Site. The total population estimated to live within one mile of the Site is 8,700 persons.

The unnamed tributary adjacent to the Site flows into the Bound Brook approximately 0.75 miles downstream of the Site. The Bound Brook flows for 1.5 miles before emptying into New Market Pond. Surface water flow from New Market Pond travels approximately 8.5 miles before discharging into the Raritan River. The dam on the western edge of New Market Pond is reportedly impassible to most fish. Spring Lake is located upstream from the Site and is associated with Cedar Brook. Both of these water bodies support secondary contact recreation including boating and fishing. All of the above-mentioned water bodies are designated by the State of New Jersey for the maintenance, migration, and propagation of the natural and established biota. These water bodies are utilized as freshwater fisheries. A fish consumption advisory has been posted for the Bound Brook and its tributaries, including nearby New Market Pond and Spring Lake. Wetlands that border the Site to the southeast diminish significantly as the Bound Brook heads downstream towards the northwest. The width of the stream in the vicinity of the Site varies from 10 to 20 feet, with a varying depth during normal conditions, of one to four feet. Groundwater is a significant source of drinking water within a four-mile radius of the Site. The majority of people within this radius are served by drinking water from either the Middlesex Water Company (MWC) or the Elizabethtown Water Company (EWC), both of which utilize supply wells within four miles of the Site.

The Bound Brook is a low-gradient stream that has been documented through past fishery surveys to contain spottail shiner, silvery minnow, white sucker, tessellated darter, American eel, largemouth bass, redbfin pickerel, rock bass, catfish, carp, and sunfish. Mammalian species reportedly observed in the Bound Brook corridor include red fox, domestic dog, muskrat, groundhog, white-tail deer, eastern gray squirrel, eastern cottontail, white-footed mice, eastern chipmunk, rat, raccoon, and opossum. Avian species reportedly identified within the Bound Brook corridor include red-tailed hawk, belted kingfisher, great blue heron, green heron, Canada goose, song sparrow, American goldfinch, domestic pigeon, barn swallow, hairy woodpecker, yellow warbler, common yellowthroat, northern oriole, killdeer, house wren, American robin, and great-crested flycatcher.

A wildlife species search and a reconnaissance level habitat assessment conducted on December 3, 2008 by Stantec Consulting Services, Inc. also identified evidence of mink, fisher, striped skunk, and wild turkey within the Bound Brook Corridor near the Site. Evidence of mink was identified upstream of the Site in the Dismal Swamp. The investigation indicated that the area adjacent to the Site (Reach 2) could potentially provide suitable habitat for the mink and that it would not be unreasonable to conjecture that mink may occur downstream of the Dismal Swamp in the Bound Brook reaches that flow through South Plainfield. Also of interest was the identification of the presence of a fisher (i.e., member of the weasel family) in the area immediately adjacent to the Site during the wildlife survey. Sightings and evidence of fisher in New Jersey are considered rare.

In 1996, the New Jersey Department of Environmental Protection (NJDEP) conducted a Site Inspection and collected surface soil, surface water, and sediment samples at the CDE facility property. In June 1996, at the request of the NJDEP, EPA collected and analyzed additional soil, surface water and sediments at the facility. The results of the sample analyses revealed that elevated levels of PCBs, VOCs, and inorganics were present at the Site.

As a result of the contamination found at the facility, in March 1997 EPA ordered the owner of the facility property, D.S.C. of Newark Enterprises, Inc., a potentially responsible party (PRP), to perform a removal action to mitigate risks associated with contaminated soil and surface water runoff from the facility. The removal action included paving driveways and parking areas in the industrial park, installing a security fence, and implementing drainage controls.

In August through December 1997, RAB collected surface and subsurface soil samples from the banks and sediment samples from the streambed of the Bound Brook. Nine sections (Reaches 1 through 9), spanning approximately 2.4 miles of the Bound Brook, were investigated. Soil samples were collected from both sides of the stream, five feet and ten feet away from the edge of the stream, from two depth intervals (0 to 6 inches and 18 to 24 inches). Sediment samples were collected from the creek at similar depths. These samples were collected in transects every 50 feet in Reaches 1 through 4, every 100 to 200 feet in Reach 5, every 200 feet in Reaches 6 through 8, and every 50 feet in Reach 9. Table 1 presents the maximum total PCB concentrations detected for the samples collected from each Reach on both sides of the Bound Brook and from its sediments.

**Table 1:** Maximum PCB Concentrations (mg/kg) Detected in Samples Collected From the Bound Brook, EPA, 1997

	North Bank	South Bank	Sediment
Reach 1	6.7	85	0.32
Reach 2	8.1	27	22
Reach 3	39	830	21
Reach 4	4.6	250	1.6
Reach 5	180	110	39
Reach 6	470	220	13.6
Reach 7	28	24	25
Reach 8	15	7.1	22
Reach 9	0.2	0.17	0.12

In 1997 the EPA Environmental Response Team (ERT) performed an ecological evaluation of the Bound Brook. This investigation identified elevated levels of PCBs in fish and sediments of the Bound Brook. Maximum PCB concentrations (Aroclor-1254) identified in crayfish, forage fish, and edible fish was 2.4 mg/kg, 20 mg/kg, and 42 mg/kg, respectively. As a result of these investigations, the NJDEP issued a fish consumption advisory for the Bound Brook and its tributaries, including nearby New Market Pond and Spring Lake.

Also in 1997, EPA began collecting surface soil and interior dust samples from residential and commercial properties near the CDE facility. The results of the sampling revealed PCBs in soil and interior dust that posed a potential health concern for residents of several of the properties tested. These investigations led to cleanups at 19 residential properties, conducted from 1998 to 2000. In July 1998, EPA included the Site on the National Priorities List.

In June 1999, soil sampling activities were performed by RAB to characterize PCB contamination in the floodplain of the Bound Brook in Reaches 5 and 6, which had the highest mean surface soil PCB concentrations of the areas investigated in 1997. The areas chosen for this investigation were selected based on their proximity to high use areas. The highest concentration of PCBs (Aroclor-1254) detected was 25 mg/kg.

In 2000, EPA initiated the Remedial Investigation (RI) for the Site and began collecting soil samples from properties further from the CDE facility. This sampling revealed additional properties with PCBs in soil at unacceptable levels and indicated a need for more extensive sampling. EPA compiled the 1997 and 1998 removal sampling data with its remedial investigation data in a RI Report for Operable Unit 1. In September 2003, EPA selected a remedy to address the contaminated soil at properties in the vicinity of the former CDE facility. The remedy included indoor dust remediation where PCB-contaminated dust was encountered

More recently, all buildings have been vacated of tenants and demolished as part of an EPA Remedial Action (Operable Unit 2). This action, which was completed in May 2008, resulted in the removal of approximately 26,400 tons of contaminated building debris. The area formerly covered by the buildings has been paved temporarily. Excavation and backfilling of the former capacitor disposal area was completed in June 2008. Approximately 21,000 tons of capacitor debris and soil were removed as part of the Remedial Action. All of the waste was shipped offsite for disposal. The current phase of the OU2 remedy addresses contaminated soils that will be treated on site by low temperature thermal desorption. The remedial design for this component of the remedy was completed in September 2008 and on-site treatment of contaminated soils by low temperature thermal desorption began in November 2009. The Remedial Investigation/Feasibility Studies (RI/FS) for the contaminated groundwater (Operable Unit 3) and contaminated sediments in the Bound Brook (Operable Unit 4) are ongoing.

Since 2007 periodic inspections have been conducted along the Bound Brook near the Site. Capacitor and capacitor parts discovered during these inspections have been collected and secured in drums at the Site for future disposal. These capacitors, most of which are relatively small in size, have extremely elevated levels of PCBs within them.

In December 2007 through January 2008, RAB recreated a portion of the sampling event that took place in the Bound Brook corridor in 1997. During this effort, only Reaches 1 through 4 were sampled; an area that spans from approximately the upstream wetland bound by Spicer Avenue through to Lakeview Avenue. The analytical results indicate that Reaches 2 and 3 contained the most elevated PCB levels in the vicinity of the Site. Reach 1, which is mostly upstream of the Site, contained the lowest levels of PCBs. Reach 4 contained elevated levels of PCBs, albeit at generally lower levels relative to Reaches 2 and 3.

Reach 2 spans the area between the twin culverts at the southeast corner of the Site to the first culvert under the Conrail tracks. Reach 3 covers the next downstream area up to the second culvert under the Conrail tracks. The maximum PCB concentrations, identified as Aroclor-1254, detected in Reach 2 were 180 mg/kg on both the north and south banks, and 190 mg/kg in the sediments. The areas of highest concentrations in Reach 2 were just downstream of the twin culverts and in the vicinity of a storm drain discharge pipe from the Site. The maximum PCB concentrations (Aroclor-1254) detected in Reach 3 were 650 mg/kg in the north bank, 500 mg/kg in the south bank, and 62 mg/kg in the sediment. Most of the transects in Reach 3 contained points with PCB detections above 100 mg/kg.

A statistical analysis was requested from the EPA National Exposure Research Laboratory, Technical Support Section comparing the two sets of PCB analytical data generated ten years apart from the Bound Brook. The purpose of this analysis was to determine whether the mean concentrations of PCB Aroclor-1254 from the soil and sediment samples had increased over time. The analysis was conducted using ProUCL 4.0, a statistical program developed by EPA for environmental applications for data sets with and without nondetect observations. The results of the comparative study showed that there was a statistically significant increase in the PCB Aroclor-1254 concentrations in both the soil and sediment samples from 2007 as compared to those from 1997.

Based on the results of the sampling event that took place in the Bound Brook corridor beginning in December 2007, further investigative activities were subsequently conducted by RAB in the area. Eight test pits were excavated for observational purposes along the eastern edge of the disposal area in Reach 2 in May 2008. At least three of the test pits were found to contain a small cache of capacitors and/or capacitor parts.

During the period of September 22 through 25, 2008 soil samples were collected upland of Reach 3; in Reach 2 in the vicinity of a 27-inch vitrified clay, storm drain discharge pipe emanating from the Site; and near a third culvert identified east of the twin culverts in order to further delineate the elevated levels of PCB contamination previously identified in those areas. In Reach 3, samples were collected from the same transects as the previous sampling event but at distances of 35 and 60 feet upland from the banks of the Bound Brook. Where conditions permitted, samples were collected at each location from three depth intervals: 0 to 6 inches, 18 to 24 inches, and 36 to 42 inches, using a Geoprobe. Two of the borings were advanced to eight feet for observational purposes. In Reach 2, soil and sediment samples were collected from two depth intervals (0 to 6 inches and 18 to 24 inches) around the discharge pipe and within the associated swale leading to the Bound Brook.

The analytical results from the September 2008 sampling event indicate that the highest level of PCBs was detected in one sample within Reach 2 in the area of the storm drain discharge pipe. Of the 14 samples collected in the vicinity of the pipe, one shallow soil sample (0 to 6-inch depth) was found to contain 2,500 mg/kg of Aroclor-1254 (a duplicate sample contained 1,100 mg/kg). The next highest PCB concentration (130 mg/kg) was from a subsurface sample (18 to 24-inch depth) collected at the same location. The average concentration of all of the samples collected near the pipe (13 samples), not including the highest detection, was 51 mg/kg. The

previous sampling event conducted during the period of December 2007 through January 2008 identified this transect as one of the most contaminated in Reach 2. The highest PCB concentration identified during that event was 180 mg/kg. This elevated detection near the storm drain discharge pipe may be indicative of a location that at one time contained a capacitor or capacitor part. An inspection of this area during the sampling event did not reveal any readily evident capacitor or capacitor parts. The highest PCB level identified near the third culvert, adjacent to the twin culverts in Reach 2, was 54 mg/kg at a depth of 0 to 6 inches.

Elevated PCB levels were detected throughout Reach 3 during the September 2008 sampling event. The highest concentration detected (180 mg/kg) was from a surface sample. In general, the PCB contamination in Reach 3 was most pervasive in the 6 to 24-inch depth interval. Except for two points, PCB concentrations dropped significantly at the 36 to 42-inch depth interval.

A water sample collected from the storm drain discharge pipe revealed the presence of total PCBs at a concentration of 6.2 ug/l. Due to the elevated PCB levels identified in the water discharging from the storm drain pipe and in the soil in Reach 2 near the pipe, a closed circuit television inspection was conducted inside the pipe on March 5, 2009 using a remotely controlled camera. The interior of the pipe was traced for approximately 82 feet underneath the Site before obstructions prevented further advancement. The inspection revealed that there was debris present in the pipe and it was cracked in several locations. The pipe was characterized as containing severe defects that would degrade within the foreseeable future to near failure or failure status.

During the period September through October 2008, ERT conducted a reassessment of the ecological conditions in the Bound Brook. The objectives of this evaluation included a determination of the total PCB, PCB congeners and dioxin-like PCB concentrations in selected fish (sunfish and carp) and invertebrates (Asiatic clams), and a comparison with historical data from the Bound Brook; re-establishment of the baseline concentrations of PCBs and dioxin-like PCBs in fish and invertebrate tissue within the Bound Brook for remedy effectiveness monitoring; identification of a fingerprint of the PCB congeners within the Bound Brook extending from the Site to New Market Pond; definition of the ecological receptors that actually exist in the Bound Brook system; completion of a focused ecological risk assessment (ERA) to evaluate the current PCB risks to selected assessment endpoints; and the generation of data to support a baseline ecological risk assessment (ERA) being conducted in the RI/FS. Fish were collected along the Bound Brook system matching sampling locations and species, to the extent practical, to historical investigations. The findings of the ecological reassessment were documented by ERT in an April 2010 report.

Comparisons of historical and current PCB concentrations found significant differences at some locations. Statistical results varied across the different fish species and tissue types. A significant difference was identified at all sample locations in Aroclor-1254 accumulation for white sucker fillet tissue between the 1997 and 2008 events, with lower mean concentrations in 2008. These findings suggest that the loading of PCBs into the Bound Brook has declined over the last ten years.

The results of evaluations conducted on PCB congener data suggest that the origins and/or other fate and transport factors are not the same throughout the study area. A distinct change in percent contribution of congeners was noted between the upstream reference area (Dismal Swamp) and the area adjacent to the Site (Reach 2), between the area adjacent to the Site and the area immediately downstream of the Site (Reach 3), and between Reach 3 and the downstream locations. Differences in percent contribution for Reaches 2 and 3 were unexpected given that Reach 2 is located adjacent to the Site, while Reach 3 was located only slightly downstream. This suggests either an additional contributing source to the Bound Brook or the result of different fate and transport factors in Reach 3. Within Spring Lake, although the same PCB Aroclors were found as are present at the Site, the congener pattern was unique.

The March 2010 ERT reassessment report of ecological risk estimates states that substantive ecological risk does exist to fish and wildlife within the Bound Brook resulting from the Site. It concluded that ecological risk does exist from PCB exposure for all assessment endpoints evaluated in the ERA. This risk exists at the Site and all downstream locations. Of particular concern is the risk to fish-consuming mammals, such as mink, which are documented to be utilizing the study area. The site-related exposure to PCBs for these receptors may exceed severe effects exposure levels, which may result in overt impacts to these animals.

As documented above, PCBs have been identified in the soils and sediments in the Bound Brook corridor near the Site. A removal action completed in November 2008 between Reaches 1 and 2 in the Bound Brook (in the area of the twin culverts) has stabilized an area that was suspected to be a source of PCB capacitors into the stream and was also identified during the sampling event conducted during the period of December 2007 through January 2008 as one of the more contaminated sections of the Bound Brook near the Site. This removal action also served to reduce potential direct contact exposures in this area through the application of rip-rap and fencing along the southeastern portion of the Site.

Although a fish consumption advisory has been issued and warning signs are posted along the Bound Brook, it is reported that persons in the area continue to fish for consumption purposes. Consumption of fish that contain PCBs at the levels previously identified in 1997 poses a potential human health threat. While the 2008 ecological reassessment indicates that the PCB loadings in the fish in the Bound Brook have decreased since the previous investigation in 1997, the overall PCB levels remain elevated in the fish. The PCB congener analyses indicate that the Site and potentially other unknown sources are believed to be the source of the PCB contamination in the fish.

Since 2007, several actions that have been taken at the Site may have potentially had or will have either a direct and/or indirect influence on the conditions in the Bound Brook. As a result of the remedial action that is currently taking place at the Site, portions of the Site that previously contained the CDE buildings were temporarily paved several years ago. This potentially could have reduced the amount of contaminated runoff from those portions of the Site into the Bound Brook. Contaminated soils and capacitors in the historical disposal area at the rear of the facility have been excavated and removed from the Site. Contaminated soils at other portions of the Site are currently being excavated and thermally treated onsite. These actions, which essentially are source removals, will serve to reduce the loading of contaminants into the Bound Brook system.

Due to the uncertainty associated with the storm drain pipe and the elevated PCB levels identified near the discharge point, the pipe was removed on July 1, 2009 as part of the ongoing remedial action. This action eliminated any flow of contaminated water, whether it was storm water or infiltrated groundwater, which may have been discharging into the Bound Brook from the pipe, and any source material such as sediments or capacitors that may have been trapped in the pipe. Periodic inspections conducted along the Bound Brook near the Site, for the purpose of identifying and removing capacitor and capacitor parts, have served to further reduce direct source loadings. A removal action completed in November 2008 armored the banks of the Bound Brook with geotextile fabric and rip-rap in the area of the three culverts and along the wetlands that border the historical disposal area on the southeastern edge of the Site. This has helped in the short term to contain releases of capacitors from an area suspected to be a source of PCBs into the Bound Brook.

Based on the available information, and the past and ongoing actions at the Site, and considering the factors identified in section 300.415(b)(2) of the National Contingency Plan, a CERCLA removal action is not warranted at this time. Although PCBs are present in the soil and sediment of the Bound Brook corridor that may pose a threat to human health or welfare or the environment, other appropriate mechanisms are available to respond to the release. EPA's remedial program is currently taking timely and appropriate actions to address the remaining PCB-contaminated soil at the Site; and to further investigate the extent of contamination, evaluate the associated risks, and identify the appropriate remedial action to address potential threats to human health and the environment for the operable unit associated with the Bound Brook.

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